HH-411 IMPACT TYPE HARDNESS TESTING UNIT

Catalog No. E4299-810

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Easy to use hardness tester

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Unit of hardness is selectable for various purposes

The HH-411 produces HL hardness scale results (L hardness: conforming to ASTM A 956), which can be converted into Vickers, Brinell, Rockwell C, Rockwell B, Shore and tensile strength, as required. And it not only converts after the tests, it also displays the converted value while testing.

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HH-411

Very user-friendly

To make a hardness test, just press the button on the impactor while holding it against the workpiece surface. It is very easy and user-friendly.

Hardness testing on very narrow surfaces is possible

Only a very small surface area is needed for testing hardness with the HH-411. (A small ø22mm for the standard type D impactor, and a minute ø4mm for the optional type DL impactor.)
This feature makes the HH-411 extremely useful for testing the hardness of surfaces such as structural elements, gear teeth, etc.

A choice of impactor

D type: Standard, general purpose type.
DC type: For inner walls of pipes.
D+15 type: For bearings and gears.
DL type: For narrow features such as small gear teeth and welded corners.

Equipped with Data Storage Function

A maximum 1800 data entries of hardness test results can be stored. This function is very useful for routine tests at work sites.

Equipped with Auto Angle Compensation Function

Impact-type hardness measurements are normally affected by gravity, depending on the angle at which the impactor is held, but the HH-411 is equipped with the latest measuring technology that automatically recognizes impactor orientation and compensates for this effect so maximum accuracy is realized in every measurement.

Specifications

Order No.	**810-298** (ASTM)	**810-299-02** (JIS)
Model	**HH-411**	
Impactor	Impact hammer with integrated detector and carbide-ball tip (D type: conforming to ASTM A 956)	
Display unit	7-segment LCD	
Display range	Leeb: 1-999HL Resolution 1HL Vickers: 43-950HV Resolution 1HV Brinell: 20-894HB Resolution 1HB Rockwell C: 19.3-68.2HRC Resolution 0.1HRC Rockwell B: 13.5-101.7HRB Resolution 0.1HRB Shore: 13.2-99.3HS Resolution 0.1 HS Tensile strength: 499-1996MPa Resolution 1MPa (Display range depends on conversion table.)	
Functions	Auto Angle Compensation Function, Offset function OK/NG judgment function, Conversion function Data storage function: 1800 data entries Statistical analysis (Average, Maximum, Minimum, Dispersion) Auto sleep function, Impact counter display function	
Testable workpiece limits	Minimum 5mm or more in thickness and 5kg or more in mass (When the sample mass is 0.1kg or more and less than 5kg, fix it against a larger mass to make it testable.) Test points: 5mm or more from the edge of the sample, 3mm or more to each of the tested points. Surface roughness of samples: Ra 10µm or less	
Output	RS-232C, SPC (each 1 output, simultaneous output is possible)	
Power supply	Alkaline AA battery 2pcs (battery life: approx. 70 hours) AC adapter (optional accessory)	
Operating environment	Temperature: 0°C to 50°C Humidity: less than 95% without condensation	
Size / Mass	Display unit: approx. 70 x 110 x 35 mm, 200g Impactor: approx. ø28 x 175 mm, 120g	

Optional accessories

Order No.	Description	Remarks	Q'ty
264-504	Digimatic Mini-Processor	DP-1VR	1
937387	Connecting cable	For DP-1VR and display unit	1
09EAA082	Printer paper	For DP-1VR 10 rolls / set	1
810-622	Thermal printer	With a connecting cable for DPU-414	1
19BAA157	Printer paper	For DPU-414 (TP411-28CL)	1
19BAA238	Connecting cable	For PC and the display unit RS-232C (for DOS / V PC)	1
526688	AC adapter	For the display unit (AD908N)	1
19BAA243	Hardness test block	880HLD (ø115mm, t33mm, 3.7kg)	1
19BAA244	Hardness test block	830HLD (ø115mm, t33mm, 3.7kg)	1
19BAA245	Hardness test block	730HLD (ø115mm, t33mm, 3.7kg)	1
19BAA246	Hardness test block	620HLD (ø115mm, t33mm, 3.7kg)	1
19BAA247	Hardness test block	520HLD (ø115mm, t33mm, 3.7kg)	1
19BAA248	Support ring	For convex surface of cylinder (R10-R20)	1
19BAA249	Support ring	For convex surface of cylinder (R14-R20)	1
19BAA250	Support ring	For convex surface of sphere (R10-R27.5)	1
19BAA251	Support ring	For concave surface of sphere (R13.5-R20)	1
19BAA457	Carbide ball	For D, DC, D+15 type impactors	1
19BAA458	Ball shaft	For DL type impactor	1
810-287	Impactor UD-411	D : approx.ø28 x 175mm, 120g (tip:ø22mm)	1
810-288	Impactor UD-412	DC : approx.ø22 x 85mm, 50g (tip:ø22mm)	1
810-289	Impactor UD-413	D+15 : approx.ø28 x 190mm, 130g (tip width 11mm)	1
810-290	Impactor UD-414	DL: approx.ø28 x 230mm, 140g (tip:ø4 mm)	1

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Standard configuration

Order No.	Description	Remarks	Q'ty
810-291	Display unit UD-410	HS conversion : HSD (ASTM)	1
810-292	Display unit UD-410	HS conversion : VHS (JIS)	1
—	Alkaline AA battery		2
—	User's manual		1
810-287	Impactor UD-411	D type, approx.ø28 x 175mm, 120g (tip: ø22mm)	1
—	Impact hammer		1
19BAA457	Carbide ball	Built-in to the impact hammer	1
19BAA459	Wrench		1
19BAA460	Cable for detector		1
19BAA451	Support ring	ø22mm	1
19BAA452	Support ring (small)	ø14mm	1
19BAA258	Brush		1
—	Case	For the display unit and impactor	1
19BAA265	Hardness test block		1
—	Case	For hardness test block	1

* This hardness tester cannot test elastic materials such as rubber.

** The inertia of the workpiece tested may affect the measurement results. Please keep this fact in mind, especially when measuring thin objects. In some cases it may be necessary to use a more massive object backing the workpiece to provide sufficient inertia at the point of test for an accurate result to be obtained.

Note:The UD-414 (DL Type Impactor) is not compatible with previous display units HH-411(**810-283-01, 810-283-02**) and UD-410 (**19BAA450-01, 19BAA450-02**). If this impactor is to be used with either of these display units then the display unit must be returned to the factory for modification.

Impactors (Optional accessories)

Various impactors can be connected to the display unit UD-410

Order No. **810-288**
Model : UD-412
Use for inner walls of cylinders.
The grip is short to allow easy positioning within a cylinder.

Order No. **810-289**
Model : UD-413
Use for concave workpieces such as gear teeth, ball bearing races, etc.

Order No. **810-290**
Model : UD-414
Use for the bottom of gear teeth, welded corners, etc.

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Mitutoyo Corporation
20-1, Sakado 1-Chome,
Takatsu-ku, Kawasaki-shi,
Kanagawa 213-8533, Japan
T +81 (0) 44 813-8230
F +81 (0) 44 813-8231
http://www.mitutoyo.co.jp

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